Appendix A
DYMS Example

An understanding of Dependable Yield Mitigation Storage (DYMS) is probably best provided by an example (Table A-1). The following assumptions are made (an exaggerated example for computational ease).

**Table A-1; DYMS Example**

| Item | Existing project | Expanded project |
|---|---|---|
| Total conservation storage | 100,000 a-f | 300,000 a-f |
| Critical period dependable yield | 200 cfs | 300 cfs |
| Unit yield | 2 cfs per 1000 a-f | 1 cfs per 1000 a-f |
| Contracted storage (user # 1) | 100,000 a-f | 200,000 a-f |
| Dependable yield (user # 1) | 200 cfs | 200 cfs |
| Contracted storage (user # 2) | none | 100,000 a-f |
| Dependable yield (user # 2) | none | 100 cfs |
| DYMS | none | 100,000 a-f |

In this example, user #1 had a prior contract for 100,000 a-f of storage, which was the entire conservation pool of the existing project. The estimated critical period dependable yield for that storage was 200 cfs. Subsequently, a second user requested storage in the project sufficient to provide an estimated critical period dependable yield of 100 cfs. The sum of the required critical period dependable yield for both users would then be 200 + 100 = 300 cfs. Reading of the yield curve at 300 cfs indicated a required total conservation storage of 300,000 a-f. In the expanded project, user #1 requires 200,000 a-f rather than the contracted 100,000 a-f to provide an estimated critical period dependable yield of 200 cfs. The difference (200,000 B 100,000 = 100,000 a-f) is the DYMS. User #2 requires 100,000 a-f of storage to provide an estimated critical period dependable yield of 100 cfs. The water supply contract for user #1 would be amended at no cost to him to provide that his share of the conservation pool is 200,000 a-f and 2/3 of the total. The contract with user #2 would provide that his share of the conservation pool is 100,000 a-f and 1/3 of the total. User #2, however, would be required to pay for 200,000 a-f. The 100,000 a-f provided to him by the contract and the 100,000 a-f of DYMS storage required to maintain the critical period dependable yield of user #1.

The following two procedures are included to provide a general understanding of how a manual determination of DYMS would be accomplished for a project without storage allocated to hydropower (Table A-2) and for one with storage allocated to hydropower (Table A-3). It is assumed that the project yield curve already exists.

**Table A-2: Procedure for a Project Without Storage Allocated to Hydropower**

| Step | Procedure |
|------|-----------|
| 1 | Tabulate the conservation storage allocated to each existing user. The sum of these should be equal to the total existing conservation storage. |
| 2 | Read the yield curve corresponding to the total existing conservation storage to obtain the total yield. |
| 3 | Prorate the total yield among the existing users on the basis of the percentage of the total conservation storage that is allocated to each user. |
| 4 | Add the yield required by the new user to the total yield provided by the existing conservation storage to arrive at the total yield to be provided by the expanded project. |
| 5 | Read the yield curve corresponding to the total yield to be provided by the expanded project to obtain the total conservation storage of the expanded project.. |
| 6 | Prorate the total conservation storage of the expanded project to each of the existing users and the new user on the basis of the percentage of their yield to the total yield of the expanded project. The storage so determined will be each user's allocation. |
| 7 | The DYMS (the new user is responsible for paying for the DYMS) is the increase in storage determined in Step 6 over that provided in Step 1 for each of the users in the existing project. |

**Table A-3; *Procedure for a Project With Storage Allocated to Hydropower***

| Step | Procedure |
|------|-----------|
| 1 | Tabulate the conservation storage allocated to each existing user including hydropower. The sum of these should be equal to the total existing conservation storage. |
| 2 | Read the yield curve corresponding to the total existing conservation storage to obtain the total yield. |
| 3 | Prorate the total yield among the existing users and hydropower on the basis of the percentage of the total conservation storage that is allocated to each user. |
| 4 | Assume a value for the total conservation storage of the expanded project. This value will be greater than the total conservation storage of the existing project. |
| 5 | Read the yield curve for the assumed total conservation storage of the expanded project to obtain the corresponding total yield. |
| 6 | Determine the storage required in the assumed expanded project for each of the water supply users in the existing project by using the percentage their existing yield is to the total yield of the expanded project. The storage required by the new use would be similarly obtained using the desired yield of the new user. The storage so determined would be each water supply user's allocation in the assumed expanded project. The remaining storage (assumed total conservation storage minus the sum of the water supply storage for each user) would be for hydropower. If this value is not equal to the hydropower storage tabulated in Step 1, repeat Step 4 through Step 6. |
| 7 | The DYMS (the new user is responsible for paying for the DYMS) is the increase in storage determined in Step 6 over that provided in Step 1 for each of the water supply users in the existing project. |